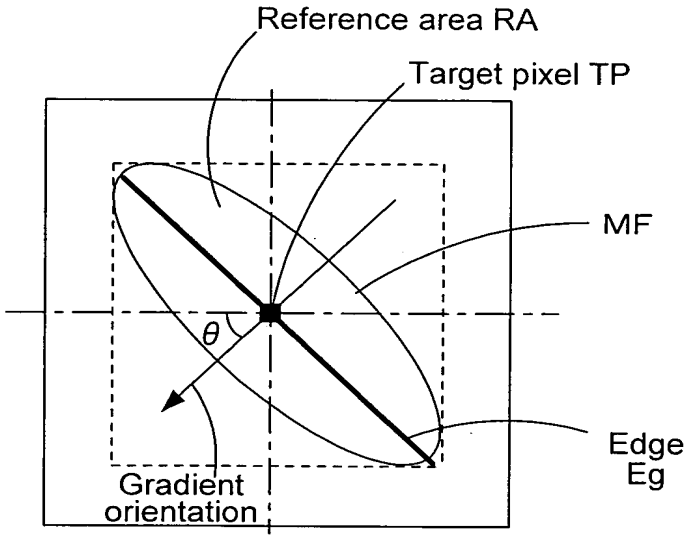
Fig.1


Reference area RA
Target pixel TP
MF
θ
Edge
Eg
Gradient
orientation

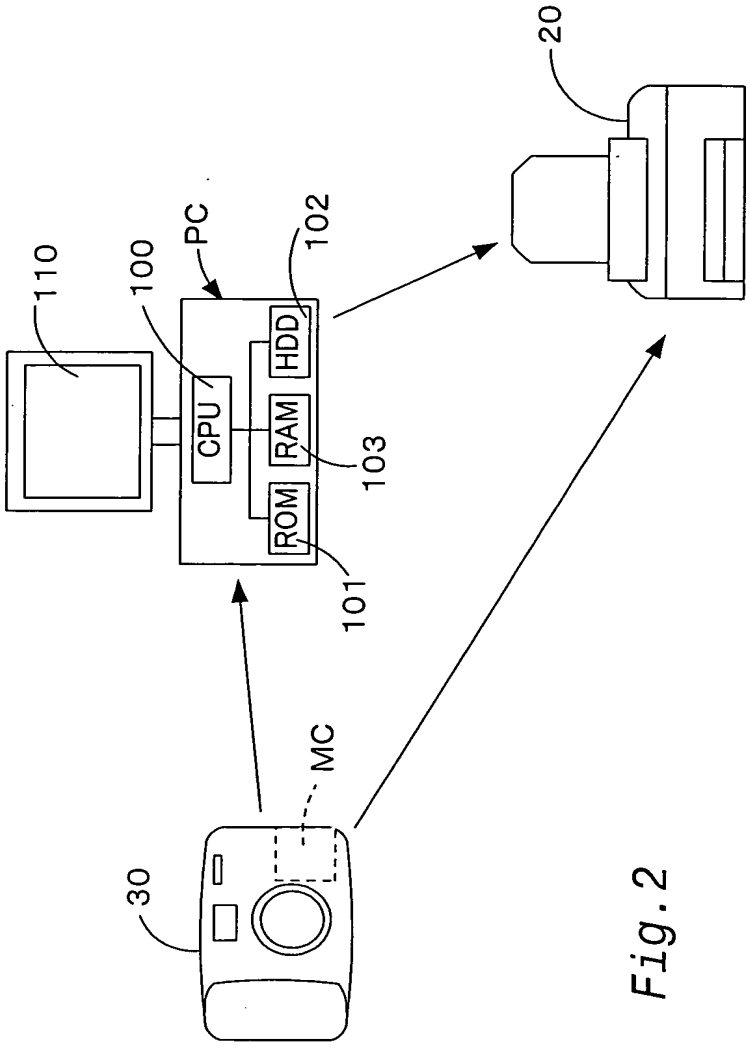


Fig. 2

Fig.3

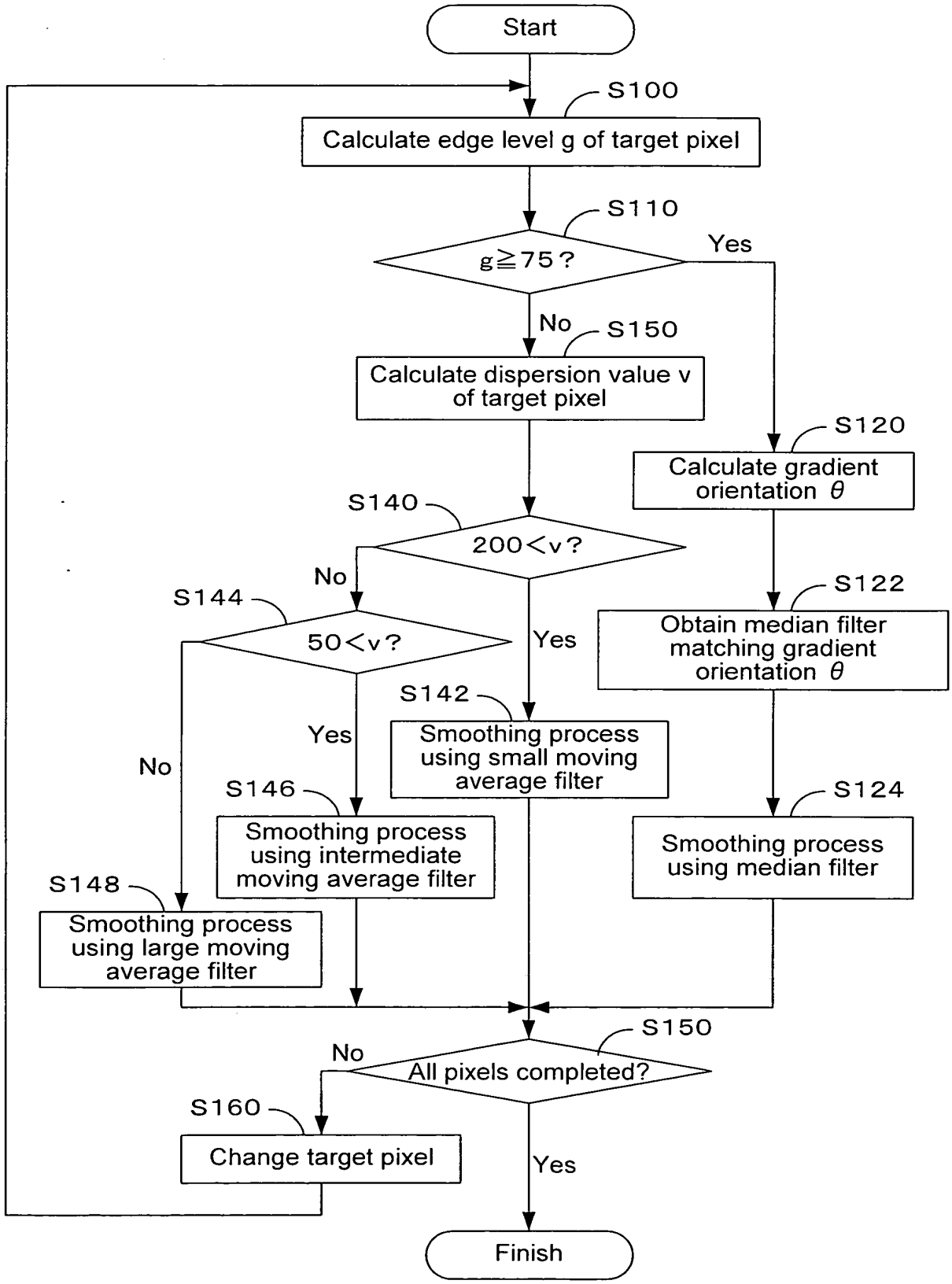

Start
S100
Calculate edge level g of target pixel
S110
g≧75?
Yes
No
S150
Calculate dispersion value v of target pixel
S120
Calculate gradient orientation θ
S140
200<v?
No
S144
50<v?
Yes
S122
Obtain median filter matching gradient orientation θ
S142
Smoothing process using small moving average filter
Yes
No
S146
Smoothing process using intermediate moving average filter
S124
Smoothing process using median filter
S148
Smoothing process using large moving average filter
S150
No
All pixels completed?
S160
Change target pixel
Yes
Finish

Fig.4(a)

Δfx

−1	0	1
−1	0	1
−1	0	1

Fig.4(b)

Δfy

1	1	1
0	0	0
−1	−1	−1

Fig.5(a)

Δfx

−1	0	0	0	1
0	0	0	0	0
−1	0	0	0	1
0	0	0	0	0
−1	0	0	0	1

Fig.5(b)

Δfy

1	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
−1	0	−1	0	−1

Fig.6(a)

22.5°

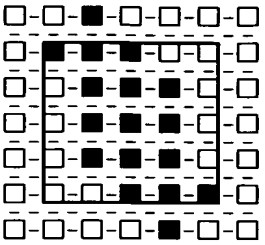


Fig.6(b)

112.5°

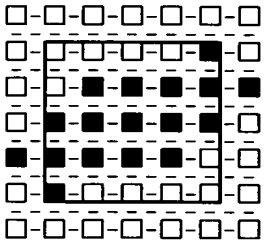


Fig.6(c)

45.0°

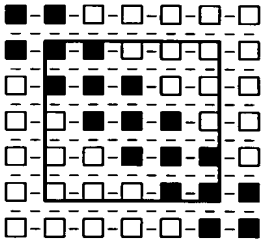


Fig.6(d)

135.0°

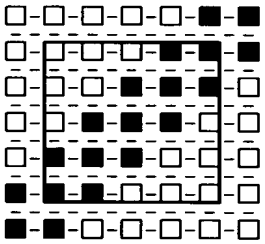


Fig.6(e)

67.5°

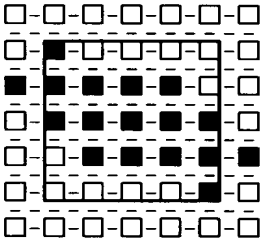


Fig.6(f)

157.5°

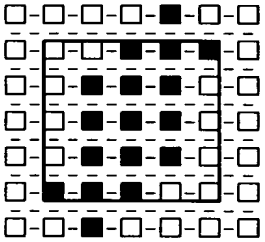


Fig.6(g)

90.0°

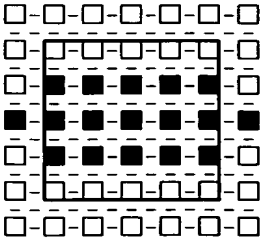


Fig.6(h)

180.0°

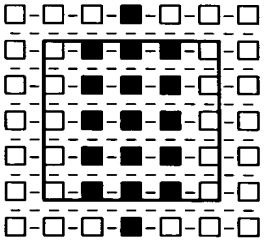


Fig.7

128 128 128 128 128 128 128
96 128 128 128 128 128 128
96 96 128 128 128 128 128
TPn1 TP
96 96 128 255 128 128 128
TPn2
64 32 32 128 128 128 128
32 32 32 64 96 128 128
32 32 32 32 32 32 128

Fig.8

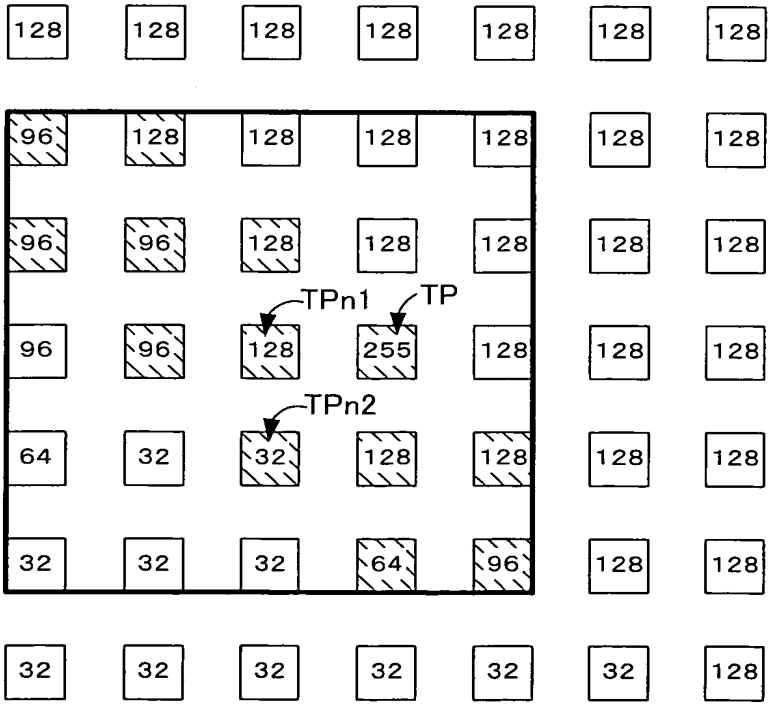

128 128 128 128 128 128 128
96 128 128 128 128 128 128
96 96 128 128 128 128 128
TPn1 TP
96 96 128 255 128 128 128
TPn2
64 32 32 128 128 128 128
32 32 32 64 96 128 128
32 32 32 32 32 32 128

Fig.9

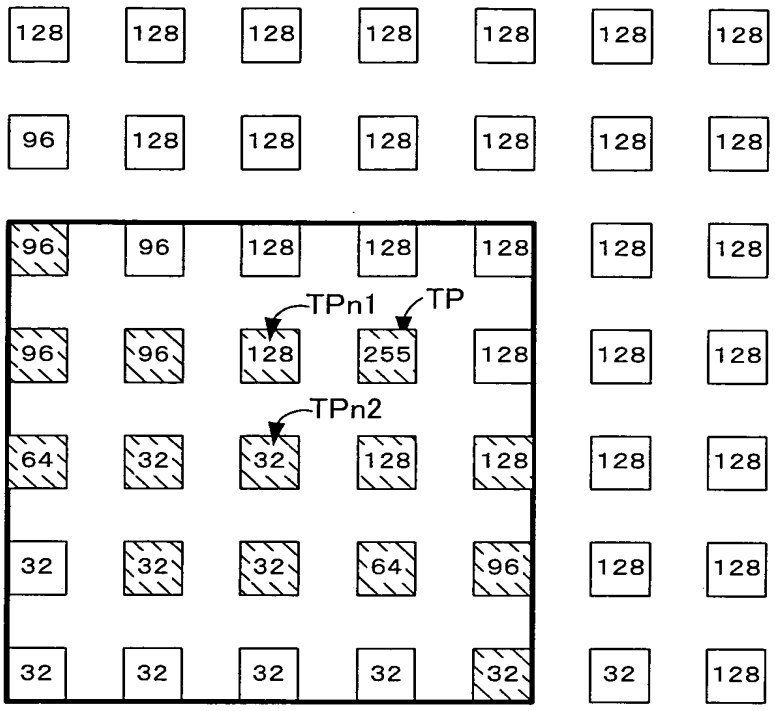


Fig.10

Target Pixel	Processed pixel value in embodiment	Processed pixel value in conventional example	Gradient orientation θ
TP	128	111	51°
TPn1	128	101	56°
TPn2	96	83	69°

Fig.11

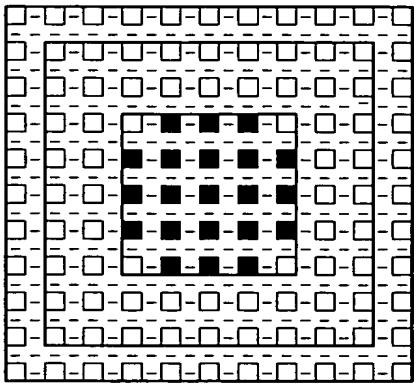


Fig.12

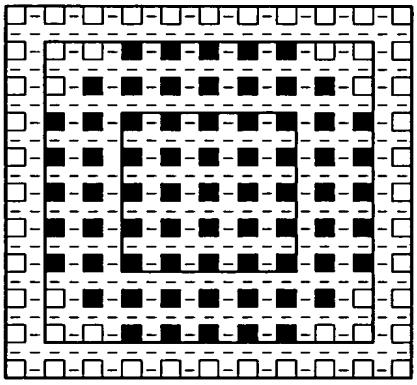
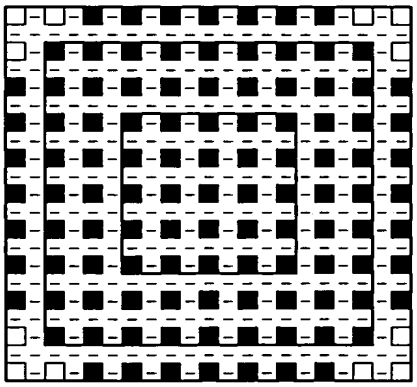



Fig.13